

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A method for registering a mobile station comprising:
 - registering the mobile station with a first Serving GPRS Support Node (SGSN), wherein the first SGSN services a first Base Station System (BSS) that provides communication services to the mobile station;
 - assembling a Neighbor List that comprises a plurality of communication channels, wherein a communication channel of the plurality of communication channels is associated with a second BSS that is serviced by a second SGSN that is different than the first SGSN; and
 - at least partially ~~registering~~ performing a Layer 2 registration of the mobile station with the second SGSN prior to the mobile station being served by the second BSS.
2. (Original) The method of claim 1, wherein at least partially registering comprises conveying, by the first Serving GPRS Support Node (SGSN) to the second SGSN, at least a portion of registration information associated with the mobile station.
3. (Original) The method of claim 1, wherein at least partially registering the mobile station with the second Serving GPRS Support Node (SGSN) comprises:
 - receiving registration information from the mobile station; and
 - conveying the received registration information to the second SGSN.
4. (Original) The method of claim 1, wherein at least partially registering comprises:
 - receiving a request to pre-register the mobile station with the second Serving GPRS Support Node (SGSN); and
 - in response to receiving the request, conveying, by the first Serving GPRS Support Node (SGSN) to the second SGSN, at least a portion of registration information associated with the mobile station.
5. (Original) The method of claim 4, wherein receiving comprises receiving, by the first Serving GPRS Support Node (SGSN) from the mobile station, a request to pre-register the mobile station with the second SGSN.

6. (Original) The method of claim 4, wherein receiving comprises:

receiving, by the second Serving GPRS Support Node (SGSN) from the mobile station, a request to pre-register the mobile station with the second SGSN;

conveying, by the second SGSN to the first SGSN, a request for at least a portion of registration information associated with the mobile station;

receiving, by the first SGSN from the second SGSN, the request for at least a portion of the registration information; and

wherein conveying comprises, in response to receiving the request from the second SGSN, conveying, by the first Serving GPRS Support Node (SGSN) to the second SGSN, at least a portion of the registration information associated with the mobile station.

7. (Original) The method of claim 4, wherein receiving comprises receiving, by the first Serving GPRS Support Node (SGSN) from the first Base Station System (BSS), a request to pre-register the MS with the second SGSN.

8. (Original) The method of claim 1, wherein at least partially registering comprises conveying, by the mobile station to the second SGSN, at least a portion of registration information associated with the mobile station.

9. (Original) The method of claim 8, wherein conveying by the mobile station to the second Serving GPRS Support Node (SGSN) comprises conveying registration information to the first SGSN.

10. (Original) The method of claim 1, wherein at least partially registering comprises:

receiving, by the mobile station, an instruction to pre-register with the second Serving GPRS Support Node (SGSN); and

in response to receiving the instruction, conveying, by the mobile station to the second SGSN, at least a portion of registration information associated with the mobile station.

11. (Original) The method of claim 10, wherein conveying by the mobile station to the second Serving GPRS Support Node (SGSN) comprises conveying registration information to the first SGSN.

12. (Original) The method of claim 1, wherein the Neighbor List informs of a Routing Area (RA) associated with each communication channel of the plurality of communication channels and wherein at least partially registering comprises:

determining the second Base Station System (BSS) that is serviced by the second Serving GPRS Support Node (SGSN) that is different than the first SGSN based on the Routing Area associated with each communication channel of the plurality of communication channels included in the Neighbor List; and

at least partially registering the mobile station with the second SGSN based on the determined second BSS and prior to the mobile station being served by the second BSS.

13. (Original) The method of claim 1, wherein each communication channel of the plurality of communication channels is associated with a Base Station System (BSS) and wherein at least partially registering comprises:

broadcasting, by each BSS associated with a communication channel of the plurality of communication channels, information concerning a Routing Area associated with the BSS;

determining the second BSS that is serviced by the second SGSN that is different than the first SGSN based on the Routing Areas broadcast by each BSS associated with a communication channel of the plurality of communication channels; and

at least partially registering the mobile station with the second SGSN based on the determined second BSS and prior to the mobile station being served by the second BSS.

14. (Original) The method of claim 1, wherein at least partially registering comprises:

determining a signal quality metric for the communication channel of the plurality of communication channels that is associated with the second Base Station System (BSS);

determining to pre-register the mobile station with the second Serving GPRS Support Node (SGSN) based on the signal quality metric; and

at least partially registering the mobile station with the second SGSN prior to the mobile station being served by the second BSS.

15. (Original) The method of claim 1, wherein at least partially registering comprises:

determining a signal quality metric for a communication channel associated with the first Base Station System (BSS);

determining to pre-register the mobile station with the second Serving GPRS Support Node (SGSN) based on the signal quality metric; and

at least partially registering the mobile station with the second SGSN prior to the mobile station being served by the second BSS.

16. (Original) The method of claim 1, wherein at least partially registering comprises:

determining a signal quality metric for the communication channel of the plurality of communication channels that is associated with the second Base Station System (BSS);

determining to pre-register the mobile station with the second Serving GPRS Support Node (SGSN) based on the signal quality metric; and

at least partially registering the mobile station with the second SGSN prior to the mobile station being served by the second BSS.

17. (Original) The method of claim 1, wherein at least partially registering comprises:

determining a geographical location of the mobile station;

determining to pre-register the mobile station with the second Serving GPRS Support Node (SGSN) based on the determined location of the mobile station; and

at least partially registering the mobile station with the second SGSN prior to the mobile station being served by the second BSS.

18. (Original) The method of claim 17, further comprising determining a geographical location of the mobile station relative to a geographical location of the second Base

Station System (BSS) and wherein determining to pre-register the mobile station comprises determining to pre-register the mobile station with the second Serving GPRS Support Node (SGSN) based on the determined location of the mobile station relative to the geographical location of the second BSS.

19. (Original) The method of claim 17, further comprising determining a coverage area associated with the second Base Station System (BSS) and wherein determining to pre-register the mobile station comprises determining to pre-register the mobile station with the second Serving GPRS Support Node (SGSN) based on the determined location of the mobile station relative to the coverage area associated with the second BSS.

20. (Original) The method of claim 17, further comprising determining a boundary between a coverage area associated with the first Base Station System (BSS) and a coverage area associated with the second BSS and wherein determining to pre-register the mobile station comprises determining to pre-register the mobile station with the second Serving GPRS Support Node (SGSN) based on the determined location of the mobile station relative to the boundary.

21. (Currently Amended) An apparatus for pre-registering a mobile station, the apparatus comprising a first Serving GPRS Support Node (SGSN) having a processor that ~~pre-registers~~ performs a Layer 2 pre-registration of the mobile station with a second SGSN, wherein the processor pre-registers the mobile station with the second SGSN prior to the mobile station being served by a Base Station System associated with the second SGSN.

22. (Original) The apparatus of claim 21, wherein the processor pre-registers the mobile station by receiving registration information from the mobile station and conveying the received registration information to the second Serving GPRS Support Node (SGSN).

23. (Original) The apparatus of claim 21, wherein the processor pre-registers the mobile station by conveying registration information to the second Serving GPRS Support Node

(SGSN) in response to receiving a request from a Base Station System (BSS) associated with the first SGSN to pre-register the mobile station.

24. (Original) The apparatus of claim 21, wherein the processor pre-registers the mobile station by receiving a request from the mobile station to pre-register the mobile station and, in response to receiving the request, conveying registration information to the second Serving GPRS Support Node (SGSN).

25. (Original) The apparatus of claim 24, wherein the first Serving GPRS Support Node (SGSN) further comprises at least one memory device that maintains the registration information and wherein conveying comprises, in response to receiving the request, conveying to the second SGSN at least a portion of the registration information maintained in the at least one memory device.

26. (Original) The apparatus of claim 24, wherein the pre-registration request identifies the second Serving GPRS Support Node (SGSN).

27. (Original) The apparatus of claim 24, wherein the first Serving GPRS Support Node (SGSN) identifies the second Serving GPRS Support Node (SGSN) in response to receiving the pre-registration request.

28. (Original) The apparatus of claim 21, wherein the processor pre-registers the mobile station by receiving a request from the second Serving GPRS Support Node (SGSN) to pre-register the mobile station and, in response to receiving the request, conveying registration information to the second SGSN.

29. (Original) The apparatus of claim 28, wherein the first Serving GPRS Support Node (SGSN) further comprises at least one memory device that maintains the registration information and wherein conveying comprises, in response to receiving the request, conveying to the second SGSN at least a portion of the registration information maintained in the at least one memory device.

30. (Original) The apparatus of claim 21, wherein the processor further assembles a Neighbor List corresponding to the mobile station and comprising a plurality of broadcast channels and wherein the Neighbor List comprises a Routing Area associated with at least one broadcast channel of the plurality of broadcast channels.

31. (Original) The apparatus of claim 21, wherein the apparatus further comprises a controller associated with a Base Station System serviced by the first Serving GPRS Support Node (SGSN), wherein the controller is in communication with the first SGSN, wherein the controller assembles a Neighbor List corresponding to the mobile station and comprising a plurality of broadcast channels, and wherein the Neighbor List comprises a Routing Area associated with at least one broadcast channel and of the plurality of broadcast channels.

32. (Original) The apparatus of claim 21, wherein the processor determines to pre-register the mobile station with the second Serving GPRS Support Node (SGSN) based on a quality of a communication channel associated with a Base Station System that is associated with the first SGSN.

33. (Original) The apparatus of claim 21, wherein the processor determines to pre-register the mobile station with the second Serving GPRS Support Node (SGSN) based on a quality of a communication channel associated with the Base Station System that is associated with the second SGSN.

34. (Original) The apparatus of claim 21, wherein the processor determines to pre-register the mobile station with the second Serving GPRS Support Node (SGSN) based on a location of the mobile station.

35. (Original) The apparatus of claim 21, wherein the apparatus further comprises the second Serving GPRS Support Node (SGSN), wherein the second SGSN receives registration information associated with the mobile station from the first SGSN and stores

the received registration information in an at least one memory device of the second SGSN prior to the mobile station communicating with the second SGSN.

36. (Original) The apparatus of claim 35, wherein the second Serving GPRS Support Node (SGSN) conveys a request to the first SGSN to convey the registration information and, in response to conveying the request, receives the registration information from the first SGSN.

37. (Original) The apparatus of claim 36, wherein the second Serving GPRS Support Node (SGSN) receives a request from the mobile station to pre-register the mobile station and, in response to receiving the request, requests registration information associated with the mobile station from the first SGSN.

38. (Previously Presented) The apparatus of claim 35, wherein the second Serving GPRS Support Node (SGSN) further establishes a communication link with at least one of a Gateway GPRS Support Node (GGSN) and a Base Station System associated with the second SGSN prior to the mobile station communicating with the second SGSN.

39. (Original) The apparatus of claim 21, wherein the apparatus further comprises the second Serving GPRS Support Node (SGSN) and wherein the second Serving GPRS Support Node (SGSN) conveys a message to the mobile station informing of a Routing Area associated with the second SGSN and, in response to conveying the message informing of the Routing Area, receives registration information associated with the mobile station .

40. (Currently Amended) A mobile station comprising:

at least one memory device; and

a processor operably coupled to the memory device that receives a Neighbor List comprising a plurality of communication channels, stores the Neighbor List in the at least one memory device, and initiates a Layer 2 Serving GPRS Support Node (SGSN) pre-registration of the mobile station by conveying conveys to an infrastructure a request to

pre-register the mobile station in a Routing Area associated with a Serving GPRS Support Node and further associated with a communication channel of the plurality of communication channels prior to the mobile station being served by a Base Station System associated with the communication channel of the plurality of communication channels.

41. (Original) The mobile station of claim 40, wherein the Neighbor List comprises information concerning the Routing Area, wherein the Routing Area is different than a Routing Area associated with a serving Base Station System (BSS), and wherein the mobile station conveys the request to pre-register based on the Neighbor List.

42. (Original) The mobile station of claim 40, wherein the mobile station receives information concerning the Routing Area from the Base Station System (BSS) associated with the communication channel of the plurality of communication channels.

43. (Original) The mobile station of claim 40, wherein the processor conveys the pre-registration request to a serving Base Station System.

44. (Original) The mobile station of claim 40, wherein the processor conveys the pre-registration request to the Base Station System associated with the communication channel of the plurality of communication channels.

45. (Original) The mobile station of claim 40, wherein the processor further receives an instruction to pre-register and conveys the pre-registration request in response to receiving the instruction to pre-register.